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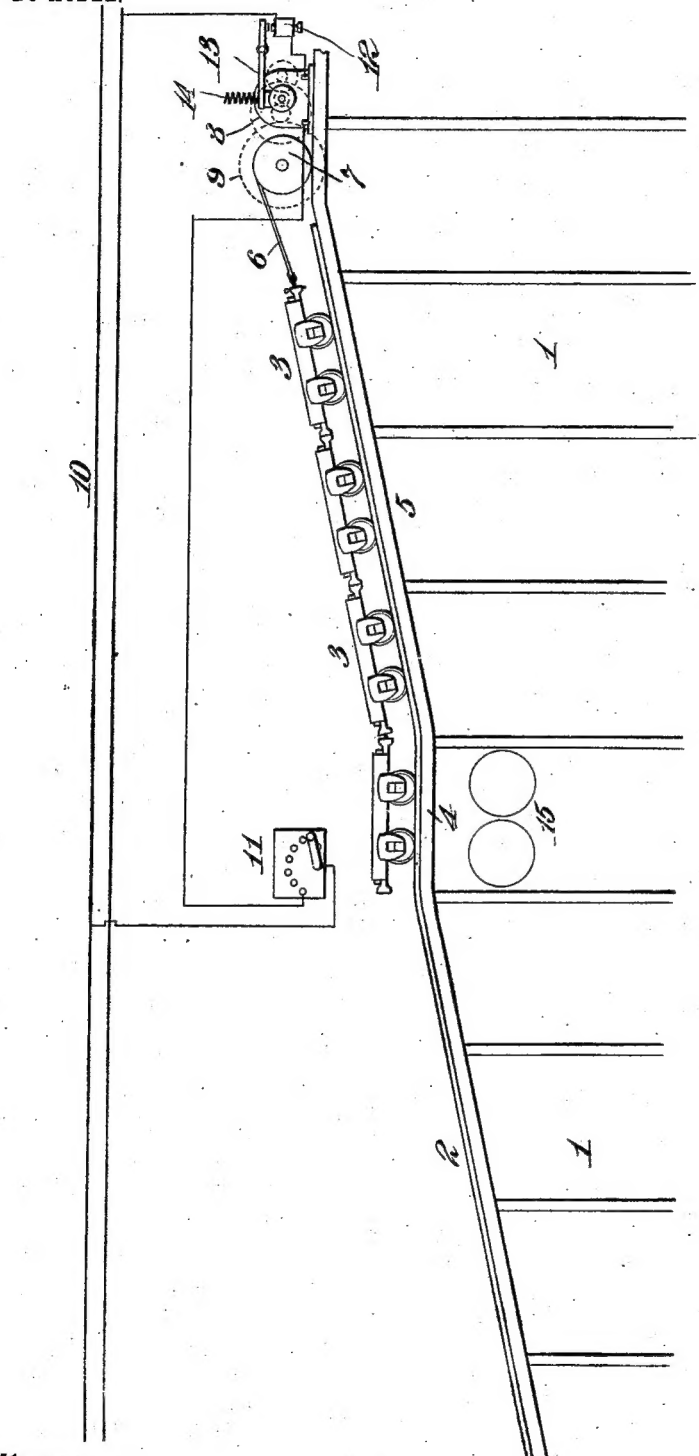
T. A. EDISON.

MEANS FOR HANDLING CABLE DRAWN CARS ON INCLINES.

APPLICATION FILED JAN. 9, 1903.

NO MODEL.



Witnesses:

Jas. F. Coleman

Jno. Robt. Taylor

Inventor

Thomas A. Edison

by Pope Edmonds & Pope

Attorneys

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF ORANGE, NEW JERSEY.

MEANS FOR HANDLING CABLE-DRAWN CARS ON INCLINES.

SPECIFICATION forming part of Letters Patent No. 722,502, dated March 10, 1903.

Application filed January 9, 1903. Serial No. 138,431. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, Orange, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Means for Handling Cable-Drawn Cars on Inclines, of which the following is a description.

In many arts it becomes necessary to effectively handle cars on inclines—as, for instance, in the unloading of coal-cars into pockets and in the depositing of material in bulk—such as limestone, lime-rock, and ore—into the hoppers of breaking, crushing, and grinding apparatus. Heretofore in the operation of cars by cables the cars have been drawn up an incline having a horizontal extension on which the cars rest while being unloaded. When all the cars have been unloaded and are located on the horizontal portion of the track, considerable difficulty is experienced in moving them back to the incline, and special power devices are required to be used for this purpose. Ordinarily the empty cars are handled on the incline by means of a brake applied to the winding mechanism; but this control is very ineffective, great wear on the mechanism results, and accidents are frequent.

I aim by the present invention to secure a very perfect control both of the loaded and light cars on inclines and to entirely overcome the objections above referred to.

To this end the invention consists in constructing an incline in the form of a suitable scaffold or superstructure with a horizontal extension at the top of the incline at which the unloading or dumping operation takes place and with an auxiliary inclined portion beyond the horizontal extension capable of receiving a greater number of cars than the horizontal portion, so that the weight of the cars on the auxiliary inclined portion will be sufficient to force the car or cars from the horizontal portion. Furthermore, I prefer to operate the winding mechanism for the cable by an electric motor controlled as to its speed in a single direction only by means of a suitable rheostat and preferably equipped with an automatic brake which comes into play when current to the motor is cut off. In this way the train is drawn up the incline by the power of the motor, and the empty cars are controlled in their return movement by admitting only sufficient current to the motor as to permit the weight of the cars to overcome the power thereof. By thus controlling the motor always in the same direction I do away entirely with the necessity of brakes or other friction apparatus for retarding the return movement of the empty cars, as is now the case.

In order that the invention may be better understood, attention is directed to the accompanying drawing, forming a part of this specification, and in which I illustrate diagrammatically an apparatus for carrying the invention into effect, showing a train of four cars, the last one of which is illustrated in position on the horizontal portion of the superstructure.

A suitable frame or superstructure 1 carries the main incline 2, leading from the ground-level and having the usual tracks for the cars 3. At its upper end the incline 2 is provided with a horizontal extension 4, beyond which is an auxiliary incline 5. The length of the auxiliary incline is greater than the horizontal portion 4, so that the auxiliary incline may contain a greater number of cars than can be located on the horizontal portion. For example, in the drawing I illustrate the train as being composed of four cars, three being shown on the auxiliary inclined portion and one on the horizontal portion. In this way the weight of the cars on either the main or auxiliary inclined portion will always be sufficient to move the car or cars off of the horizontal portion. The cars are drawn up the incline by a cable 6, connected to a drum 7, driven by a motor 8 through suitable reducing-gearing 9. The motor 8 is preferably an electric motor connected across the mains 10 and its circuit including an ordinary rheostat 11. Preferably the motor-circuit includes a coil 12, which when energized retracts a brake-shoe 13, cooperating with a band-wheel on the motor-shaft. When current to the motor is cut off, a spring 14 applies the brake, as will be understood.

In operation the cable 6 is secured to the front of the train and current is supplied to the motor through the rheostat 11. The first

effect of the current is to release the brake 13, permitting the motor to operate to draw the train up the incline. Preferably the train is advanced so that the front car rests upon the horizontal portion 4, at which point it may be unloaded. The current is now cut off from the motor, whereupon the brake 13 will be operated to lock the cars in position. In the drawing I illustrate crushing-rolls 15 for receiving the contents of the cars, and when these rolls are used each car is preferably provided with a skip (not shown) containing the material, so that by removing each skip from the car a charge of material can be delivered to the crushing-rolls. Obviously, however, the cars can be unloaded in any other way. When the front car of the train has been unloaded, the rheostat 11 is again operated, releasing the brake 13 and exerting a torque in the motor sufficient to bring the second car onto the horizontal portion, whereupon the current is again cut off from the motor and the brake once more operates to lock the train in the new position. These operations are repeated until all the cars have been unloaded. When it is desired to allow the empty cars to pass down the incline, the rheostat 11 is operated to permit the motor to develop a sufficient torque as to be overbalanced by the weight of the empty cars, which therefore are permitted to slowly descend. If the empty cars tend to descend too rapidly, more current is admitted to the motor, and vice versa. By making use of the auxiliary inclined portion 5 it will be seen that the cars tend to always move downward, notwithstanding the fact that a horizontal portion is provided at which the unloading operation takes place, while by employing the special arrangement of motor described I do away entirely with the necessity of using brakes or other friction devices to resist the descent of the empty cars.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In apparatus for handling cable-drawn cars, the combination of a main incline, a horizontal extension at the top thereof, an auxiliary incline, a cable, and means for operating the same, as and for the purposes set forth.

2. In apparatus for handling cable-drawn cars, the combination of a main incline, a horizontal extension at the top thereof, an auxiliary incline longer than the horizontal portion, a cable, and means for operating the same, as and for the purposes set forth.

3. In apparatus for handling cable-drawn cars, the combination of an incline, a cable, a winding-drum for operating the cable, an electric motor for operating the winding-drum, and a rheostat for controlling the speed of the motor in a single direction, as and for the purposes set forth.

4. In apparatus for handling cable-drawn cars, the combination of an incline, a cable, a winding-drum for operating the cable, an electric motor for operating the winding-drum, a rheostat for controlling the speed of the motor in a single direction, and an automatic brake for locking the motor when current is cut off from the same, as and for the purposes set forth.

This specification signed and witnessed this 18th day of December, 1902.

THOMAS A. EDISON.

Witnesses:
FRANK L. DYER,
JNO. ROBT. TAYLOR.